Massachusetts Department of Conservation and Recreation
Bureau of Forest Fire Control and Forestry
Forest Management Proposal
Name: Beulah Land Red Pine Removal

Date Posted:	**July 8, 2015**
End of Comment Period:	**August 22, 2015**
Region:	**West**
Recreation District:	**Lakes**
Forest Management District:	**Central Berkshires**
State Forest:	**Chester/Blandford State Forest**
Closest Road:	**Beulah Land Road**
Town	**Blandford**

Contact Information:

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Overview:

The Beulah Land Red Pine Forest Management project is on the central portion of the Chester-Blandford State Forest (see Locus Map) along Beulah Land Road (Cole Estate Road on some historic maps) near the intersection with Observation Hill Road. It comprises approximately ninety two acres of red pine plantation, hemlock hardwoods and oak- hardwoods forest types.

The conditions that led to selecting this project for forest management are:

- Significant portions of the project area have been affected by biotic (red pine scale) agents that are causing mortality in the overstory red pine trees.
- Due to the loss of overstory crown cover there is an acceptable density of sugar maple, black birch, hop hornbeam and other native tree saplings available to be released in the understory.
- This project will provide an opportunity to repair drainage and erosion issues on Observation Hill Road.
- Will provide an opportunity to demonstrate thinning of young oak-hardwood stands for increased growth and timber quality.
- Desire to capture monetary value of exotic red pine trees prior to mortality of the stand.
- This project area offers an excellent opportunity to demonstrate and fulfill objectives for DCR Woodlands including the restoration of a native ecosystem.

The Beulah Land Red Pine Removal Forest Management Project proposes to:

- Remove/salvage an overstory of dying red pine stand and release an existing understory .
- Demonstrate thinning for quality and vigor within the Hemlock/Hardwood and oak - hardwood forest types.

- Remove/reduce the costs and safety concerns of the dying red pine stands along traveled roads.
- Demonstrate harvesting techniques and best management practices that protect forest productivity, soil and water resources.
- Repair portions of Beulah Land road and Summit Hill Road.
- Fulfill management approaches for Woodlands as directed by the Forest Futures Visioning Process (2010) and subsequent Management Guidelines (2012) including the restoration of a native ecosystem.

Stand Description:

Stand Information: The proposed project area consists of approximately 92 acres of Red Pine, Oak-Hardwood and Hemlock-Hardwood forest types. Throughout the project area the dominant tree species that were observed are red pine (Pinus resinosa), red oak (Quercus rubra), Hemlock (Tsuga canadensis), sugar maple (Acer saccharum), red maple (Acer rubrum), black birch (Betula lenta), white birch (Betula papyrifera), white ash (Fraxinus americana), black cherry (Prunus serotina), American beech (Fagus grandifolia) and quaking aspen (Populus tremuloides). The exotic red pine plantation portion of this project area has been shaped by rapid mortality in recent years caused by red pine scale (Matsucoccus resinosae) (http://www.nhstateparks.org/uploads/pdf/RP_pestalert.pdf).

The DCR Management Guidelines of 2012 stated that forest stands will be "classed . . . and considered for silvicultural treatments that generally fit their productivity, structural complexity (or potential thereof) and diversity". The current species compositions and the GIS analysis of the Beulah Land Road site history (land use; agriculture/logging) and conditions (soil types, productivity; vegetation cover) suggests a range of site complexity from moderate to high indicating that even age methods of regeneration may be appropriate at this location for the existing oak-hardwood forest type.

There are three major forest types in this project area. They are red pine plantation, oak-hardwood and hemlock-hardwood stands. In some areas due to mortality and mixing of native trees these forest types are blended together causing the type boundary to be indistinct. Below is a description of each forest type.

- Red Pine Plantation – There are approximately 35 acres of declining red pine plantation. These stands are approximately 95 years old and fully stocked. The soil type in these stands is 921E also known as The Westminster-Millsite Association (see next section on soil description). These plantations are currently even-aged two story stands. The over story which is dominated by red pine with small amounts of red oak, poplar, black birch, white birch as well as other hardwood species is in the medium sawlog size class, or roughly an average of 12-14 inch diameters. Currently the red pine is in a state of rapid decline due to red pine scale. The understory is currently stocked with sugar maple, red maple and red oak. This young emerging stand is approximately 20 feet tall with an average diameter of 2-5 inches.
- Oak-Hardwoods - Approximately 30 acres of the project area are stands dominated by red oak, poplar, black birch, white birch, red maple and other associated species. This forest type is approximately 100 years old and is fully stocked with immature small sawlog and firewood sized trees. These stands generally consist of more than 50% of the basal area in red oak with other northern hardwood species as associates. This soil type is also located

within the 921 soil series (see next section on soil description). There is currently no defined understory however there pockets of advanced regeneration throughout the stand.

- Hemlock Hardwoods – Approximately 30 acres are in the hemlock-hardwood forest type. This area of fully stocked small sawlog trees is approximately 100 years old. This stand is also located in 921 soil series. Hemlock, red oak and poplar dominate this forest type with black birch, white birch as well as other associated species mixed in. Hemlock Woolly Adelgid (HWA) has been identified in adjacent stands and has caused extensive mortality surrounding Sanderson Brook Falls. There is no defined understory in these stands.

Topography: This proposed project area is located in the central portion of Chester-Blandford State Forest adjacent and east of Beulah Land Road. The project is bounded by Beulah Land roads to the west and an unnamed brook to the north. Observation Hill Road is a portion of the eastern boundary and a forest type change is the remainder of the east boundary and the south boundary. The lowest point of elevation (960 feet) is located at the northern portion of the project area. From here the terrain rises quickly to the south and east to an elevation of 1380 feet at the southern end of the project area.

The project area ranges from generally flat in the Southern portions with slopes facing west and northwest. These slopes range from less than five percent to over 40 percent in the gullies created by the steams. A portion of the project area is extremely steep and is covered in sporadic rocks and boulders.

Soil: As mentioned above the soils within this project area are in the Westminster-Millsite Association. These are broken down into two soil types (921C and 921E) which for forestry use can be considered the same. The Westminster soils are typically found in the upper slopes and are shallow and excessively drained. The Millsite soils are moderately deep and well drained and located on the less sloping portions. This soil type is considered moderate for forest growth, low risk for erosion and has few equipment limitations. (Excerpts from "Soil Survey of Berkshire County Massachusetts", NRCS 1988).

Previous Silvicultural Treatments: Although not a lot of historic paper records exist for much of this forest the past uses can be determined by historic ownership, a forestry stand map from 1927 and the current forest composition. The main portion of this state forest was owned by the Peck Lumber Co. and in 1924 the Commonwealth purchased a large portion from them. A remaining portion of the original Peck Lumber Co. lands was purchased in 1974 from The New England Power Co.

This project area and much of the surrounding area had been clear-cut or "clean cut" (term used on 1927 map) approximately 100 years ago and was replanted to red pine after natural regeneration began. These plantations had a mix of results where some portions became dominated by red pine with other areas having very sporadic red pine. Much of this was dependent on whether the newly planted red pine could compete with the established red oak and poplar sprouts. Some of the variation in these stands could have been influenced by a pre-commercial weeding treatment favoring the planted red pine in areas close to the road during the time period of the CCC camps.

Aesthetic, Recreation, Wetlands, Cultural, Rare Species and Wildlife Considerations:

Recreation and Aesthetics: The main access to the state forest is Beulah Land Road. This road is owned by the town of Blandford until it crosses into the state forest boundary where its ownership

changes to DCR. Access to the project area and landing locations will be off the DCR owned portion of Beulah Land Road. Some landing sites are preexisting and will be utilized when possible. All landings will be graded and restored upon completion of this project. In conjunction with this project restoration of eroded sections of both Beulah Land Road and Observation Hill Road will be a priority.

Chester-Blandford SF is open to all legal passive recreation activities that are allowed on DCR properties including hunting, fishing, snowshoeing, hiking and birding. As directed in the Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines" a 50 foot buffer where slash will be light and natural in appearance will be in place along CCC Ski Trail mentioned below.

The CCC Ski Trail is located within the project area. The last formal maintenance of this trail was approximately 12 years ago. After lying dormant for many years, the Student Conservation Crew (SCA) trail cleared the trail and it was placed back on the official trail maps. During the 2006 trail inventory of this forest, portions of this trail showed damage from illegal ATV use. In accordance with the "Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines" trail restoration will be a priority. Installing drainage features to prevent further erosion will occur on the CCC Ski Trail.

There is also a trail located in this project area that was built illegally and is not recognized by DCR as a designated trail. This trail runs through the Chester-Blandord State forest from east to west, and is known as the White Trail. Sections of this trail within the state forest have attracted illegal mountain bike riding and associated trail building as well. As in previous forestry projects within the Chester-Blandford SF illegal trails will be removed with the timber sale operation.

Streams and Wetlands: Along with the stream along the northern boundary mentioned above there is one additional stream located in the middle of the project area running generally parallel to Observation Hill Road. This stream is dammed before crossing Beulah Land Road. Both of these streams have fairly steep grades. These streams flow into Sanderson Brook which crosses RT 20 and flows into the Westfield River.

There are no mapped certified vernal pools by NHESP however several potential vernal pools are mapped just outside of the project area. There were two potential vernal pools found in a Pre-Harvest Vascular Plant Inventory that was conducted in 2008. Both of these are located outside of the current project area. There may also other seasonal seeps, intermittent streams or small forested wetlands areas located throughout the project area not seen during initial site visits.

Cultural Resources: There are no known pre-contact sites or cultural resources within the proposed project, however several CCC era historic features occur just outside of harvest area. The dam of the unnamed brook mentioned above will be surrounded by this project. An old chimney is located at the site of the old CCC ski lodge found at the bottom of the ski trail across the street from the harvest area. The dam and chimney as well as any other features found within the project area will be protected from disturbance during any operation and will be treated according to guidelines set forth in the "Bureau of Forestry – Cultural Resource Management Protection Standards & Guidelines". During reconnaissance no stone walls were found. If any walls are found they will be left intact during this project.

Rare and Endangered Species: According to the NHESP "Massachusetts Natural Heritage Atlas 13th Edition" there is no priority or estimated habitats located in the proposed harvest area. No rare plants have been identified in the field to date. During the Pre-Harvest Vascular Plant Inventory

that was conducted in 2008 there were no state listed plant species nor were any invasive species found in the area. Care will be taken to properly report and address the needs of any state-listed rare plant or wildlife species if found on the site.

Wildlife: No rare animals or critical habitat were noted upon the initial site visit. Large mammals noted by observed sign were deer and coyote. Small mammals noted were squirrel and porcupine. It has been observed in previous forestry operations nearby that large herbivore pressure is a minor concern. Due to the deteriorating nature of the forest types in this project area there is an abundance of large diameter coarse woody debris (CWD) and both live and dead wildlife trees (snags).

Sale Layout and Harvesting Limitations:
The timber sale will use subdivisions or units of the project/contract area to effectively control logging operations.

Project Access: Access to the proposed project area will be from Chester Road in the town of Blandford to Buelah Land Road, both are town roads. At the boundary of Chester-Blandford SF, Beulah Land Road becomes a State Forest Road. From the State Forest line access to the site will continue on Beulah Land Road for approximately ½ mile to the southern edge of the project area and first potential landing site. Beulah Land Road continues the length of the project area an additional mile to the intersection of Sanderson Brook Road.

This project will utilize existing landing areas for both forwarder and truck landings. It is anticipated that this project will be primarily a cut-to-length harvester and forwarder operation, allowing for smaller landing.

Skid Road and Trails: All forwarder trails will be designated during the timber marking of the project area by the forester. Any existing trails found will be utilized when possible and new trails will be laid out as directed in the "Massachusetts Forestry Best Management Practices Manual" and "Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines".

Wetland & Stream Crossing: There is no anticipated wetland or stream crossing within this project area and every effort will be made to avoid stream and wetland crossings if water features are found. All regulated water features found in the area will at minimum follow the guidelines of the "Massachusetts Forestry Best Management Practices Manual".

Road and Trail Buffers: There will be no harvesting along any town or State DOT owned road. Residual Basal area along portions of Beulah Land Road will be low due to density of red pine that will be removed. To alleviate this within 50 feet of the road edge all other species will be retained barring safety issues. As directed in the Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines" a 50 foot buffer where slash will be light and natural in appearance will be in place along the above Beulah Land Road and the CCC Ski Trail.

Equipment Limitations: This project will require a cut-to-length harvester and forwarder for the protection of understory regeneration in the red pine stands.

Excluded Areas: If wetlands are identified within the project area they will be clearly marked and excluded from harvest. Equipment will be excluded from areas of sustained 40% or greater slopes.

Erosion and Sedimentation: Unwanted movement of soil will be controlled by following recommendations in the "Massachusetts Forestry Best Management Practices Manual". All work will be limited to dry or frozen soil conditions. Restoration of existing trails will help mitigate current and future erosion of the Beulah Land Road, Observation Hill Road and the CCC Ski Trail.

Site Restoration: Upon completion of activity in the project area all roads, forwarder roads and forwarder trails will be left in a stable state by grading and installing water bars as needed. All landing will be clear of debris, graded and seeded with "Berkshire Conservation Mix" and straw.

In-kind Services: Proposed in-kind services to be attached to this project to date.

- Repair and restoration of drainage features on Beulah Land Road and Observation Hill Road.
- Maintenance cutting of vegetation and restoration of illegal off-road vehicle damage of the CCC Ski Trail. An attempt to block access to illegal vehicles will be made.
- Assist Bureau of Recreation in removal of hazard trees within the Sanderson Brook Falls recreation area.

Proximity to Designated Forest Reserves: There is no designated large scale forest reserves located adjacent or near this project area.

Silviculture:

Red Pine Plantations: Due to the species composition and rapid mortality of these stands, even aged silviculture will be utilized to manage for improvement. The silvicultural practices in these stands will demonstrate an overstory removal with reserves of native hardwoods. These stands will be managed to change this stand from a planted red pine dominated overstory to a natural oak – hardwood stand. Forest management efforts will also be aimed at creating and maintaining vertical (tree heights) and horizontal (down woody material) stand complexity.

Although the existing understory will remain intact and scattered native trees will remain in the overstory this project will seek the approval from the DCR Commissioner as required in the "Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines" for harvest opening larger than 1/3 acre. Due to the varied density of existing native trees in the overstory openings larger than 1/3 acre will occur in the overstory. The understory is anticipated to remain fully stocked with small 1-5 inch dbh native hardwood trees.

The primary goal of treatment in these stands is to remove the diseased red pine while retaining, protecting and releasing the advanced regeneration currently in place. The secondary goal of management in these stands is to capture the potential product and value of the red pine prior to total stand collapse.

- **Silviculture Methods:** An overstory removal also called single stage shelterwood with reserves will be prescribed for the red pine plantations. This will be the only step in converting these plantations to new natural oak-hardwood stands. Within these stands all red pine will be removed except when needed to satisfy filter strip requirements. It is anticipated that all poplar will be harvested promoteing the sprouting and retention of this

species in the future. Trees of other species including oak, cherry, maples and birches which make up approximately 10 percent of the current overstory will be retained permanently to provide structurally diversity in the stand. After this harvest releases the current understory dominated by sugar maple, hop horn beam and black birch a new age class will be established.

- **Desired Future Conditions:** By releasing the sapling sized stand of hardwoods by harvesting the diseased red pine, the resulting stand will provide habitat diversity in size and structure in the larger forest ecosystem for years to come.
- **Anticipated Future Treatments:** This stand should be examined in approximately 5 years to ensure the advanced regeneration has survived and additional regeneration is of desired species. No further treatment is expected until this stands reaches 40-50 year old, at which time commercial thinning may be conducted.

Oak-Hardwoods: Silvicultural practices in these stands will demonstrate commercial thinning of oak/hardwoods to provide additional space, light and water resources for remaining trees. These stands will be managed for optimal growth of high quality sawlog trees. Forest management efforts will also be aimed at retaining wildlife trees and ensuring adequate course woody debris.

The primary goal of treatment in these oak/hardwood stands is to reduce competition in the overstory and increase growth of red oak and other preferred tree species for high quality wood products in the future. Secondary goals of this project are to capture the commercial value of low vigor, damaged and/or diseased trees for low grade forest products and fuelwood markets.

- **Silviculture Methods:** A commercial thinning will be applied though out the oak hardwood stands where the basal area or density of the stand will be reduced to allow for adequate resources for remaining growing stock. This will remove approximately one third to one half of the currently over stocked stand. Priority for trees to be removed will be based on quality (poor form, structural damage) and crown class (understory and intermediate) and species
- **Desired Future Conditions:** This harvest should lead to a stands of high quality red oak and other hardwood species. The stand will be fully stocked and trees will have ample opportunity to grow. As the stand matures wildlife trees will become larger and provide more habitat opportunities.
- **Anticipated Future Treatments:** This stand should be examined in approximately 10 years to verify if the goals treatment were met. It is anticipated that the next silvicultural treatment will occur roughly 20 years after this current harvest and will begin the process of regenerating the stand.

Hemlock-Hardwoods: Silvicultural practices in these stands will demonstrate group selection harvesting and commercial thinning of hemlock/hardwoods to promote regeneration in advance of the HWA caused mortality in these stands. These stands will be managed for a high level of tree and understory plant species diversity, while trying to retain a component of hemlock. Forest management efforts will also be aimed at creating and maintaining vertical (tree heights) and horizontal (down woody material) stand complexity. This will be the first step in converting these even aged stands to uneven aged.

The primary goal of treatment in these hemlock/hardwood stands is to retain hemlock as softwood component to keep diversity of stand level types in the forest. This may not be possible with the advancement of HWA in the area, but clusters of the healthiest hemlocks will be identified

for retention, and even if these retained hemlocks eventually succumb to HWA, they will provide valuable clusters of snag habitat for wildlife and avoid having dispersed dead hemlock throughout the stand which could pose a potential safety hazard to hikers.. Establishing white pine will also be attempted to act as a secondary soft wood species. A secondary goal in this area to capture value of low vigor, damaged and/or diseased trees while ensuring the potential for future growth and regeneration of desirable high quality wood products.

- **Silviculture Methods:** Group selection, a form of uneven aged regeneration, to encourage regeneration of mid shade tolerant species like red oak and white pine, coupled with intermediate thinning in the remaining areas to favor future growth on well-formed canopy trees that have good potential to provide both renewable wood products and wildlife mast production will be prescribed for these Hemlock/Hardwood Stands. This will be the first step in establishing regeneration in an area where high levels of mortality are expected. During this project 30-50% percent of the area will be regenerated by harvesting 1/3 acre group openings. These groups can be located to promote advanced regeneration or establish new regeneration. Within these group openings all trees over 5 inches in diameter and all hardwoods over 4.5 feet in height will be removed leaving behind the advanced softwood regeneration.

  The commercial thinning will be used to release dominant and co-dominant hemlock trees to provide additional light and nutrients in hopes of warding off the immediate effects of HWA. White pine will also be a tree favored to remain in the thinned portion of the stand. Where thinning will occur no more than 50% of the basal area will be removed.
- **Desired Future Conditions:** In twenty years the openings created in this stand will have regenerated with desirable species. The new cohort of trees will be dominated by oak, birch and maple with white pine in a lesser amount. The residual hemlock from the original stand may be deceased or be in a state decline.
- **Anticipated Future Treatments:** This stand should be examined in approximately 10 years to ensure adequate regeneration has been achieved in the group openings. If the overstory resists mortality from HWA a treatment can occur roughly 20 years after this current harvest to expand and create new group openings to further regenerate the stand and add an additional age class. If the expected mortality occurs in this stand no further commercial work may take place until the new stand is larger enough for commercial work.

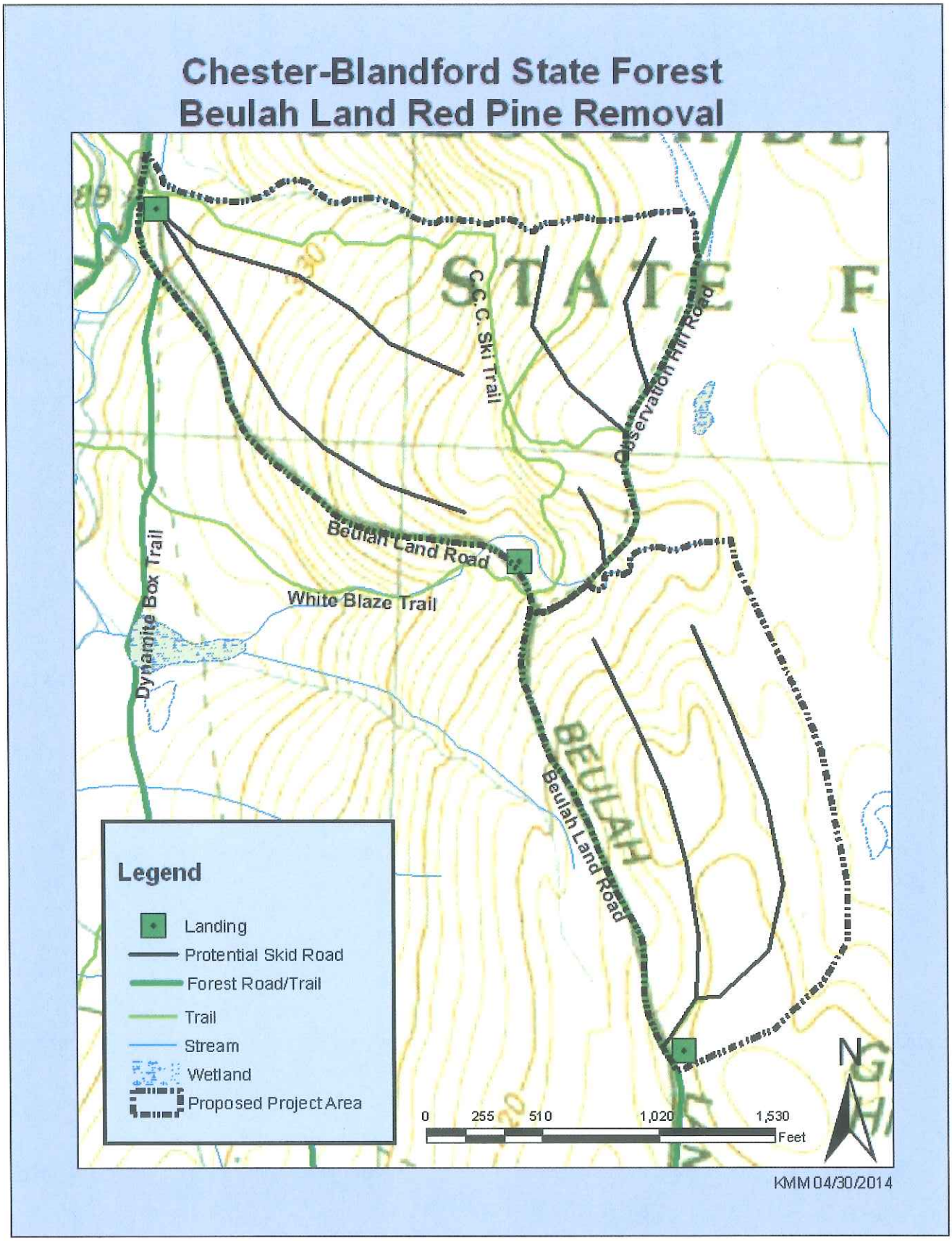
District Forester: _____ **Date:** 12-24-14

Field Operations Team Leader
Or Park Supervisor: Darrell W. Cudlow **Date:** 1/6/15

Regional Director: Robert J. Wallace **Date:** 12-24-14

Management Forestry
Program Supervisor: _____ **Date:** 1/2/15

Attached: Topographic map showing project details. Locus map showing project location within regional context.


Chester-Blandford State Forest
Beulah Land Red Pine Removal
STATE F
C.C.C. Ski Trail
Observation Hill Road
Beulah Land Road
White Blaze Trail
Dynamite Box Trail
BEULAH
Beulah Land Road
Legend
Landing
Protential Skid Road
Forest Road/Trail
Trail
Stream
Wetland
Proposed Project Area
0
255
510
1,020
1,530
Feet
N
KMM 04/30/2014

Chester-Blandford State Forest
Beulah Land Road Red Pine Removal - Locus Map